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(56) Documents cited  
GB 2232404 A GB 2226546 A GB 2201663 A  
US 4537344 A US 4418863 A US 4151948 A

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UK CL (Edition L) B8P PC2A PK3 PR PS  
INT CL<sup>5</sup> B65D

## (54) Stacking tray

(57) A blank of sheet material for use in forming a stacking tray (10) comprises a floor portion (14) and at least two portions (16, 18, 20, 22) for folding along fold lines to form walls of the tray. Each wall forming portion (20, 22) defines a keying portion (28) which, when the respective wall-forming portion is folded, extends upwardly from the respective wall. The floor portion (14) defines apertures (30) for receiving the keying portions (28) of a corresponding tray located below the tray in a stack.

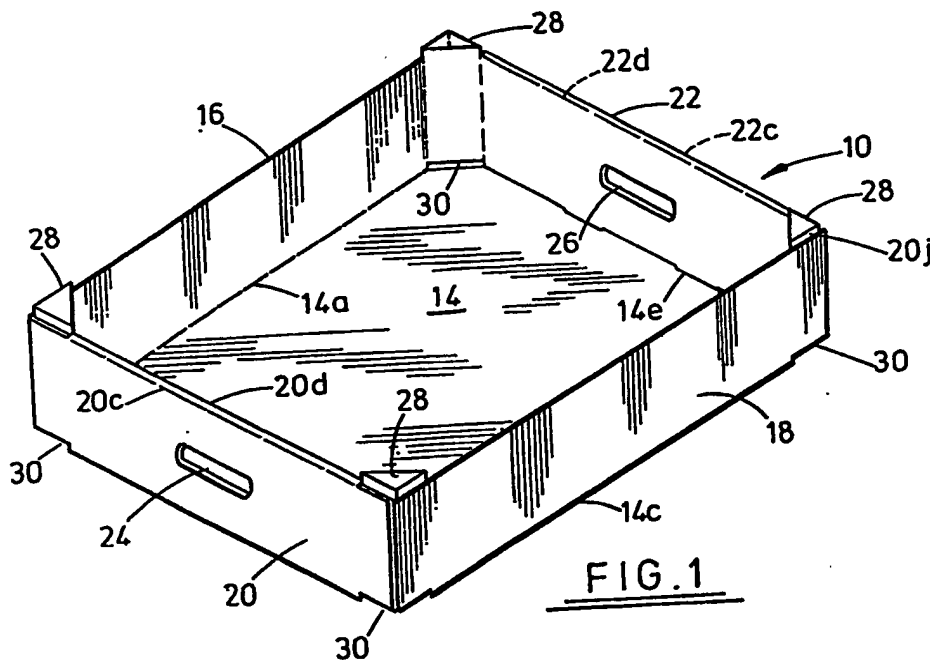


FIG. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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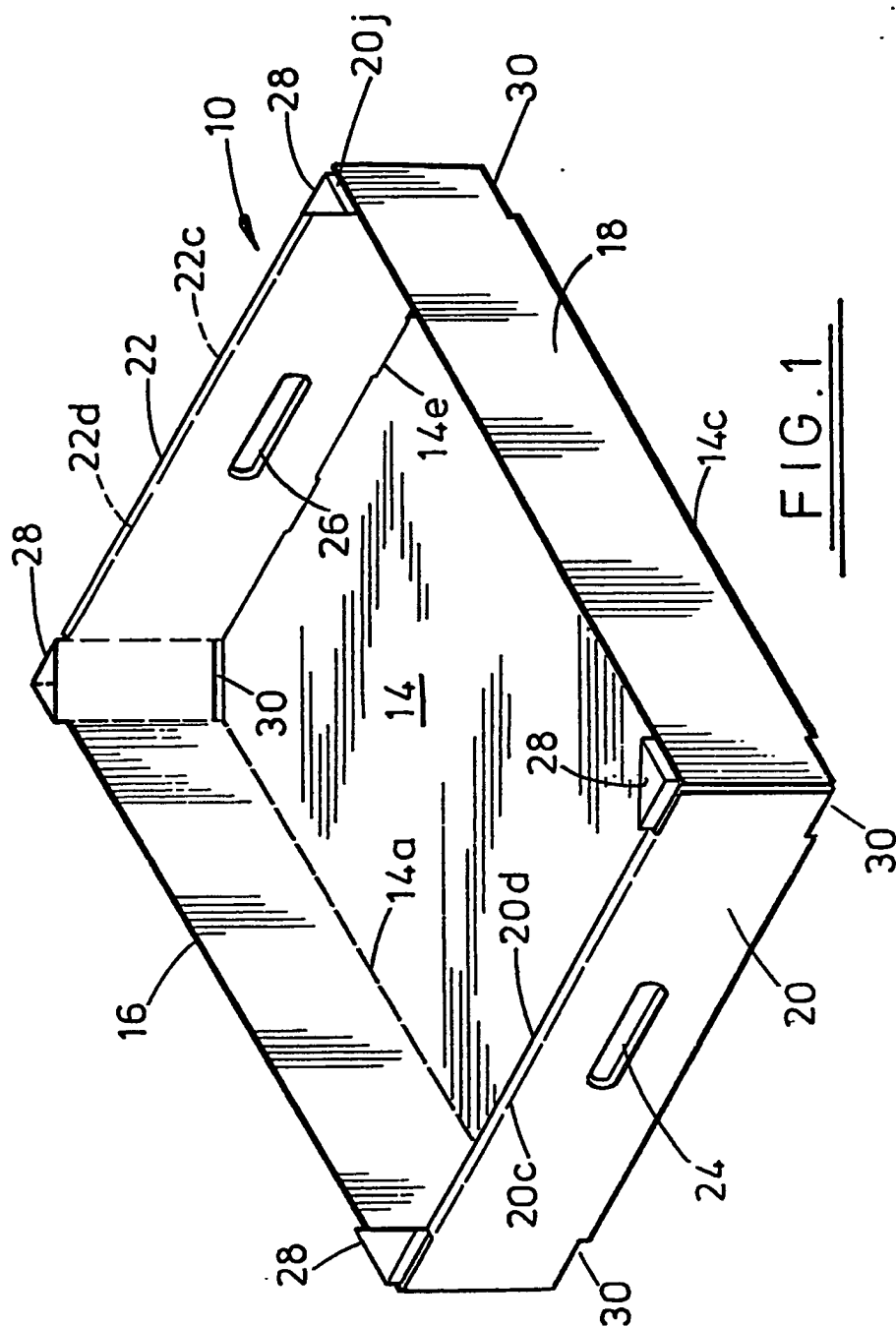


FIG. 1

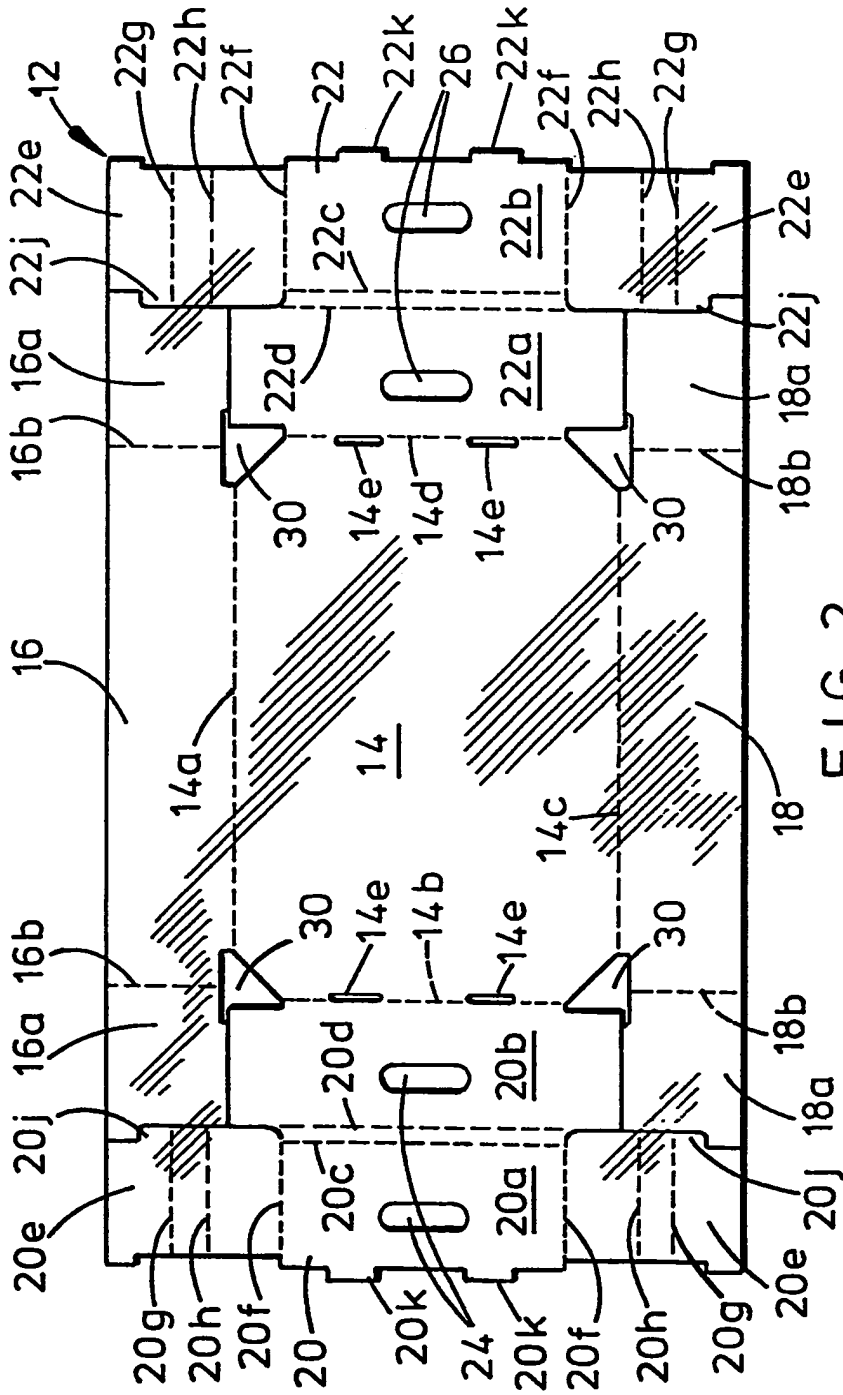


FIG. 2

STACKING TRAY

This invention relates to a stacking tray and in particular, but not exclusively, to a tray for use in the storage and transport of soft fruit.

Currently, soft fruit is stored and transported in stacks of cardboard trays, each tray containing a number of punnets of fruit. The trays are supplied to the fruit grower as pre-cut and creased blanks and are folded by the grower to form the tray. Each tray blank is supplied with four plastic corner posts which are clipped into the corners of the tray and are intended to extend above the fruit in the tray and permit a number of trays to be stacked on top of one another without damage to the fruit. For transport a number of trays may be wrapped together using plastic film. It is inconvenient to supply the separate posts and these add significantly to the costs of the trays, thus adding to the grower's costs.

It is among the objects of the present invention to provide stacking trays which may be formed from a single blank and do not require the use of separate posts, and further to provide trays which will interlock with adjacent trays in a stack.

Accordingly in one aspect of the present invention there is provided a blank of a sheet material for use in forming a stacking tray, the blank comprising a floor

portion and at least two portions for folding along fold lines to form walls of the tray, each wall forming portion defining a keying portion which, when the wall forming portion is folded, extends upwardly from the respective wall, and the floor portion defining apertures for receiving the keying portions of a corresponding tray located below the tray in a stack.

Preferably, four keying portions are provided in each blank and are positioned for location in the corners of the tray formed by the blank. Alternatively, two or three keying portions may be provided.

Most preferably, the keying portions are cut to permit folding along a plurality of fold lines to provide keying posts having two or three angled walls of sheet material. The presence of two or more angled walls increases the rigidity and strength of the posts. In a preferred arrangement the keying portions are folded to form triangular keying posts.

In a simple embodiment, each wall forming portion may require only a single transverse fold to form a wall of a tray. However, it is preferred that each wall forming portion is in two parts defined by two fold lines and the portion is folded in successive folding operations to form a double thickness wall. In this form of blank, the keying portion is located on the outermost fold line. Most preferably, the outermost fold line has two adjacent fold lines, the portion between the lines for defining an

upper face of the wall, and creating a space between the folded parts of the portion to accommodate retaining flaps forming part of portions for forming adjacent walls of the tray. The keying portions may also include retaining flaps which are also located and retained between the folded parts of the wall forming portions.

The blank may be provided with deep end and side wall forming portions for forming a box, and may also be provided with lid forming portions.

These and other aspects of the present invention will now be described, by way of example, with reference to the accompanying drawings, and in which:

Figure 1 is a perspective view of a stacking tray in accordance with a preferred embodiment of the present invention; and

Figure 2 is a plan view of a blank for use in forming the tray of Figure 1.

Figure 1 shows a tray 10 formed by folding the blank 12 shown in Figure 2 of the drawings. The blank 12 is formed by cutting a sheet of material and also by forming crease or fold lines in the material by partially cutting through the material. In the Figures the through cuts are shown as solid lines while the fold lines are shown as broken lines. In this example, the sheet material is corrugated sheet cardboard.

The tray 10 comprises a floor 14, two side walls 16, 18 and two end walls 20, 22. The floor and side walls are

formed of a single thickness of sheet while the end walls are formed of double thickness sheet. The end walls 20, 22 also include cut-outs 24, 26 which provide handles and each end wall 20, 22 includes two keying posts 28, each post being located in a respective corner of the tray. The upper end of each post extends above the adjacent end and side wall for keying with a corresponding tray located above the tray in a stack. To provide such a stack with additional stability cut-outs 30 are provided in each corner of the floor 14 to receive the upper ends of the posts of a corresponding tray located below the tray in a stack. It will be noted that each post 28 is generally triangular in form and the cut-outs 30 are similarly triangular in form.

Reference is now made in particular to Figure 2 of the drawings, to describe the folding operation to form the tray. The floor 14 is defined by four fold lines 14a, 14b, 14c, 14d. The side walls 16, 18 are partially defined by the longitudinal fold lines 14a, 14c and each wall 16, 18 includes end flaps 16a, 18a which are folded inwardly around transverse fold lines 16b, 18b to provide retaining flaps. To provide the double thickness end walls 20, 22 each end wall comprises two parts 20a, 20b, 22a, 22b joined by a pair of closely spaced transverse fold lines 20c, 20d, 22c, 22d. The inner parts 20b, 22b are of similar width to the floor 14 whereas the outer parts 20a, 22a extend the full width of the blank 12 and

each part 20a, 22b includes flaps 20e, 22e. Each flap 20e, 22e is attached to the respective part 20a, 22a by a longitudinal fold line 20f, 22f and includes two longitudinal fold lines 20g, 20h, 22g, 22h. The flaps 20e, 22e are folded about the fold lines 20f, 20g, 20h, 22f, 22g, 22h to provide the posts 28 and the flaps 20e, 22e are cut from the blank such that, when the end walls are folded about the fold lines 20c, 22c, keying portions 20j, 22j extend upwardly of the upper edges of the walls 20, 22. The outermost portions of each flap 20e, 22e does not include a keying portion 20j, 22j such that the ends of the flaps may be located between the folded parts 20a, 20b and 22a, 22b.

The folded blank retains its configuration through the location of keys 20k, 22k in corresponding apertures 14e provided on the fold lines 14b, 14d.

The tray 10 produced may be securely and stably stacked with corresponding trays thus facilitating storage and transport of material contained in the trays. The form of tray illustrated would typically have application in the storage and transport of soft fruit, however it will be obvious to those of skill in the art that blanks of different configuration may be provided for use in forming deeper boxes which may be open or provided with lids. Also, although the blank described above is formed of corrugated cardboard, the blank may equally well be formed of other materials, such as solid cardboard or thin plastic sheet.



CLAIMS

1. A blank of a sheet material for use in forming a stacking tray, the blank comprising a floor portion and at least two portions for folding along fold lines to form walls of the tray, each wall-forming portion defining a keying portion which, when the wall-forming portion is folded, extends upwardly from the respective wall, and the floor portion defining apertures for receiving the keying portions of a corresponding tray located below the tray in a stack.
2. The blank of claim 1 wherein four keying portions are provided in each blank and are positioned for location in the corners of the tray formed by the blank.
3. The blank of claim 1 or claim 2 wherein the keying portions are cut to permit folding along a plurality of fold lines to provide keying posts having two or more angled walls of sheet material.
4. The blank of claim 3 wherein the keying portions are adapted to be folded to form triangular keying posts.
5. The blank of claim 1, 2, 3 or 4 wherein each wall-forming portion requires only a single transverse

fold to form a wall of a tray.

6. The blank of claim 1, 2, 3 or 4 wherein each wall-forming portion is in two parts defined by two fold lines and each portion is foldable in successive folding operations to form a double thickness wall.

7. The blank as claimed in claim 6 wherein each keying portion is located on the outermost fold line of a respective wall-forming portion.

8. The blank of claim 7 wherein the outermost fold line has two adjacent fold lines, the portion between the lines for defining an upper face of the wall, and creating a space between the folded parts of the portion to accommodate retaining flaps forming part of wall-forming portions for forming adjacent walls of the tray.

9. The blank of claim 8 wherein the keying portions further include retaining flaps which may be located and retained between the folded parts of the wall-forming portions.

10. The blank of any one of the preceding claims having deep end and side wall-forming portions for forming a box.

11. The blank of any one of the preceding claims wherein

the blank is provided with lid-forming portions.

12. A tray or box formed of a blank in accordance with any one of the preceding claims.

13. A blank substantially as described herein and as illustrated in Figure 2 of the accompanying drawings.

14. A tray substantially as described herein and as illustrated in Figure 1 of the accompanying drawings.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

GB 9209791.4

**Relevant Technical fields**

(i) UK Cl (Edition L) B8P (PC2A, PK3, PR, PS)

(ii) Int Cl (Edition 5) B65D

**Databases (see over)**

(i) UK Patent Office

(ii)

**Search Examiner**

MIKE HENDERSON

**Date of Search**

18 JUNE 1993

Documents considered relevant following a search in respect of claims 1-14

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2232404 A (BOIX MAQUINARIA SA) whole specification relevant	1,2,5, 10,12
X	GB 2226546 A (BOIX MAQUINARIA SA) whole specification relevant	1,2,5, 10,12
X	GB 2201663 A (BOIX MAQUINARIA SA) whole specification relevant	1,2,6, 10,12
X	US 4537344 (THOMAS) whole specification relevant	1,5,10,12
X	US 4418863 (KIMBRELL) whole specification relevant	1,5,10,12
X	US 4151948 (DE LA FUENTE) whole specification relevant	1,2,5, 10,12

Category	Identity of document and relevant passages	Relevant to claim(s)

### Categories of documents

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**P:** Document published on or after the declared priority date but before the filing date of the present application.

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